

An efficient hydration of nitriles to amides with supported ruthenium catalyst under neutral conditions

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Amide synthesis is an important reaction in the organic lab and industry. We have developed a facile heterogeneous catalytic system Ru(OH)<sub>x</sub>/MnO<sub>2</sub> to synthesize the amide from hydration of nitriles. Benzylic, aliphatic and vinyl nitriles are easily catalyzed by Ru(OH)<sub>x</sub>/MnO<sub>2</sub> with excellent yields and selectivities in water at 60°C. Pharmaceutically important amides are synthesized by hydration of the heterocyclic nitriles. Moreover, present system produced a very high turnover number of 32,500 for the hydration of cyanopyrazine (50 mmol). The catalyst is robust and can be reused for five times after isolation from the reaction mixture by centrifugation and easy workup.